RHODORA, Vol. 92, No. 870, pp. 54–56, 1990

OBSERVATIONS ON THE FLORAL SHOOTS OF *MONOTROPA HYPOPITYS* (MONOTROPACEAE)

A. Randall Olson

Monotropa is one of ten achlorophyllous, obligate mycotrophic genera in the Monotropaceae (Cronquist, 1981). Members of this genus basically exist as perennial root masses associated with and completely dependent upon their mycorrhizal fungi in mixed and coniferous forests. The only aerial portions of this taxon are bracteate, nodding floral shoots which arise directly from the root system and become erect during fruit development. One of the major characters used to separate the two species is the flower number associated with each above-ground axis. *Monotropa uniflora* L., as the name indicates, consistently produces a single, terminal flower; *M. hypopitys* L. usually produces a raceme-like inflorescence bearing several flowers, but a number of single flowered specimens have been reported (Wallace, 1975). Aerial shoots of *M. hypopitys* bearing a single flower suggest that this character may be of limited taxonomic use in certain circumstances.

A small population of *Monotropa hypopitys* located in a moist, coniferous forest in central Colchester County, Nova Scotia, Canada has been monitored over the past five years. The number of aerial shoots produced from year to year is extremely variable. In July 1988, two single-flowered shoots were observed to be relatively smaller and thinner than the multiflowered shoots in the vicinity. One of the single-flowered shoots eventually succumbed to a fungal disease; the other single-flowered specimen was collected and fixed in FAA (formalin-acetic-acid-alcohol) for preservation in the wet collection of the A.E. Roland Herbarium. For the purposes of this note, a floriferous bract is defined as having either a functional flower in its axil or an aborted flower bud in its axil. Sterile bracts have neither structure associated with their axils.

Dissection and study of the preserved single-flowered specimen of *Monotropa hypopitys* revealed the presence of a lateral, aborted flower bud in the axil of each of three bracts inserted below the functional, terminal flower at the distal end of the shoot. Figure 1 illustrates a portion of the terminal flower, a sterile bract, and the first of the three floriferous bracts with an aborted bud. Subsequent examinations of herbarium and fresh material indicate

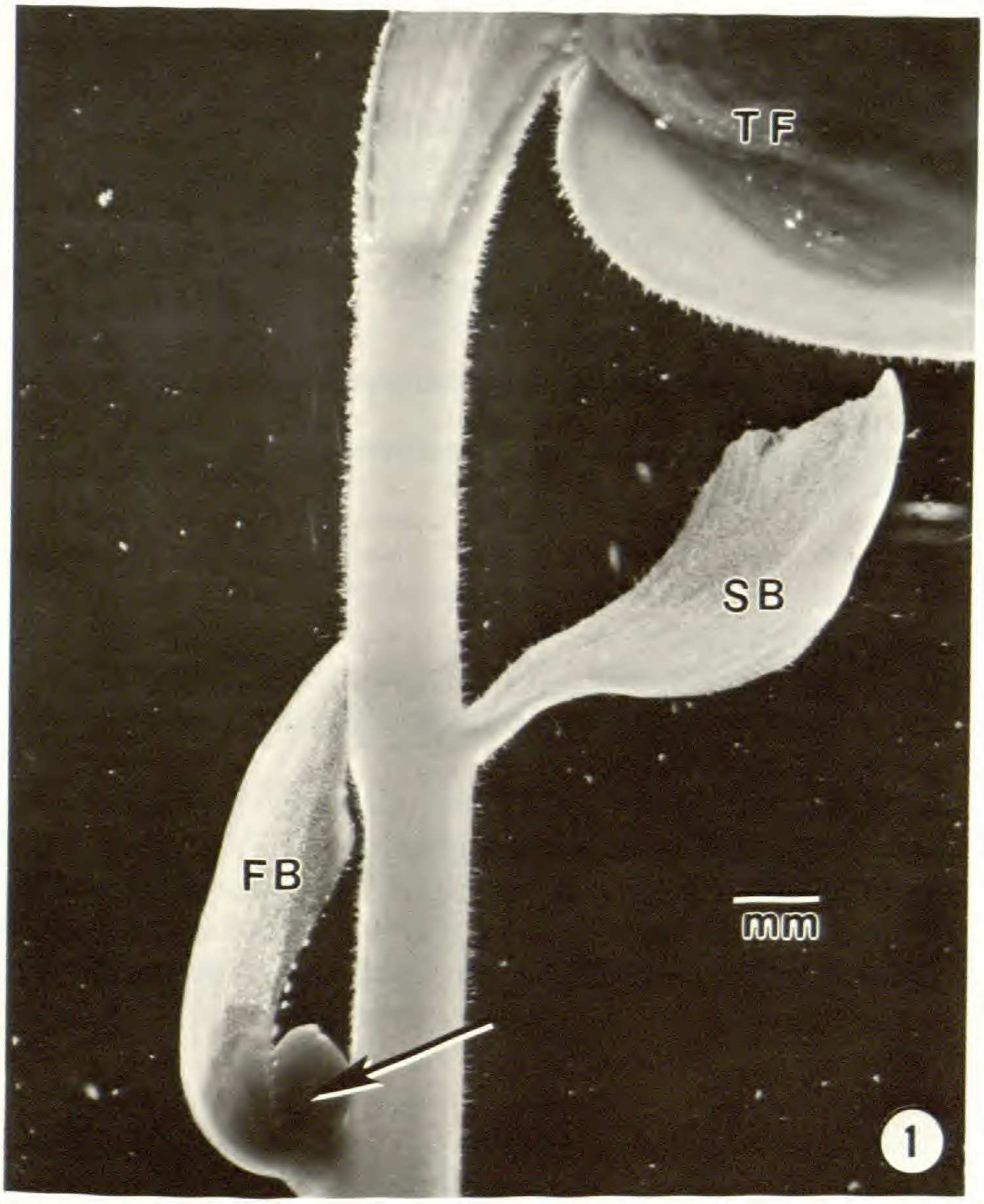

Figure 1. *Monotropa hypopitys* L. Arrow indicates an aborted flower bud in the axil of a lateral bract. FB = floriferous bract; SB = sterile bract; TF = terminal flower.

that a significant number of multiflowered aerial shoots in a population also produce a variable number of bracts with an aborted flower bud in the axil (Olson, unpubl.). Out of a total of 16 aerial shoots produced by the same population in July 1989, all but one shoot had formed at least one aborted bud in the axil of a lateral bract in addition to those lateral bracts with a functional open flower.

To date, there are no reports of *Monotropa uniflora* producing

more than a single, terminal flower, whereas *M. hypopitys* appears consistently to produce multiple floriferous bracts with either a functional flower or an aborted bud in the axil. If these observations are verified from careful developmental and field studies, the number of potential flowers as indicated by the presence of only one or more than one floriferous bract may be a reliable and, therefore, useful distinguishing character between these two taxa.

LITERATURE CITED

CRONQUIST, A. 1981. An Integrated System of Classification of Flowering Plants. Columbia Univ. Press, New York.

WALLACE, G. D. 1975. Studies on the Monotropoideae (Ericaceae): taxonomy and distribution. Wasmann J. Biol. 33: 1–88.

A. E. ROLAND HERBARIUM
DEPARTMENT OF BIOLOGY
NOVA SCOTIA AGRICULTURAL COLLEGE
P.O. BOX 550
TRURO, NOVA SCOTIA
CANADA B2N 5E3